PATENT ABSTRACTS OF JAPAN

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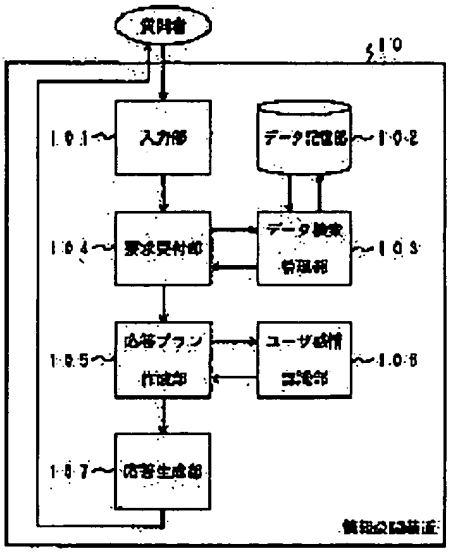
FUKUI MIYOSHI

(54) INFORMATION PUBLICATION DEVICE

(57)Abstract:
PROBLEM TO BE SOLVED: To provide an information releasing device capable of reducing the mental burdens of a user by realizing natural and smooth interaction for which the feeling of the user is considered.
SOLUTION: In this information publication device for inputting the data of plural forms including a text, sound, a picture and a pointing position, extracting the intention and feeling information of the user from the inputted data, preparing a response plan and generating a response to the user, a user feeling recognition part 106 for recognizing the feeling state of the user from the internal state of a response plan preparation part 105, the intention and feeling information of the user and the transition on a time base of interaction condition information including the kind of the prepared response plan is provided and the response plan preparation part 105 selects or changes a response strategy corresponding to the recognized result of the user feeling recognition part 106 and prepares the response plan matched with the response strategy.



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[Date of requesting appeal against examiner's decision of rejection]
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CLAIMS

[Claim(s)]
[Claim 1] An input means to input the data of two or more gestalten including a text, voice, a picture, and a pointing position. An extraction means to extract an intention of a user and sentiment information from the data inputted by this input means. A response plan creation means to draw up a response plan based on the extraction result of this extraction means. A response generation means to generate the response to the aforementioned user based on this drawn-up response plan. It is information disclosure equipment equipped with the above. The internal state of the aforementioned response plan creation means, A feeling recognition means to recognize the aforementioned user's feeling condition in a user's intention row by which extraction was carried out [aforementioned] from transition on the time-axis of feeling information and dialog status information including the classification of a response plan by which creation was carried out [aforementioned] is provided. The aforementioned response plan creation means follows the recognition result of the aforementioned feeling recognition means, chooses or changes response strategy, and is characterized by drawing up the response plan corresponding to the response strategy.

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DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]
[Drawing 1] The functional block diagram of the information disclosure equipment of the 1st operation gestalt of this invention.
[Drawing 2] The flow chart for explaining the operations sequence of the information disclosure equipment of the 1st operation gestalt.

[Drawing 3] Drawing showing the number-of-times sentiment model of a dialog of the 1st operation gestalt.
[Drawing 4] Drawing showing the number-of-times sentiment model of a dialog which considered the sentiment of the 1st operation gestalt.
[Drawing 5] Drawing showing the correction conditions of the 1st operation gestalt.
[Drawing 6] Drawing showing the algorithm which specifies the sentiment which the sentiment word of the 1st operation gestalt expresses.
[Drawing 7] Drawing showing an example of the dialog of the 1st operation gestalt.
[Drawing 8] Drawing showing the sentiment transition model of the 1st operation gestalt.
[Drawing 9] Drawing showing the sentiment transition model of the 1st operation gestalt.
[Drawing 10] Drawing showing the sentiment transition model of the 1st operation gestalt.
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[Drawing 12] Drawing showing the sentiment correspondence table of the 1st operation gestalt.
[Drawing 13] Drawing showing the algorithm of evaluation of the user sentiment of the 1st operation gestalt.
[Drawing 14] Drawing showing the sentiment transition model of the 1st operation gestalt.
[Drawing 15] The functional block diagram of the information disclosure equipment of the 2nd operation gestalt of this invention.
[Drawing 16] The functional block diagram of the information disclosure equipment of the 2nd operation gestalt.
[Drawing 17] The functional block diagram of the information disclosure equipment of the 2nd operation gestalt.
[Drawing 18] The functional block diagram of the information disclosure equipment of the 2nd operation gestalt.
[Drawing 19] The flow chart for explaining the operations sequence of the information disclosure equipment of the 2nd operation gestalt.
[Drawing 20] Drawing showing an example of a response of the 2nd operation gestalt.
[Drawing 21] Drawing showing the dialog changes model of the 2nd operation gestalt.
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[Drawing 30] Drawing showing the sentiment field table of the 2nd operation gestalt.
[Drawing 31] Drawing showing the state where non-language information was assigned to the sentiment space of the 2nd operation gestalt.
[Drawing 32] Drawing showing the response plan creation table of the 2nd operation gestalt.
[Drawing 33] Drawing showing the format of a response of the 2nd operation gestalt.
[Drawing 34] Drawing showing the example of response generation of the 2nd operation gestalt.
[Drawing 35] Drawing showing the format of a response of the 2nd operation gestalt.
[Drawing 36] Drawing showing the format of the response which added the expression information on the 2nd operation gestalt.
[Drawing 37] Drawing showing the example of response generation which applied the attitude and the degree of intimacy of the 2nd operation gestalt.
[Drawing 38] Drawing showing the response strategy of the 2nd operation gestalt.
[Drawing 39] Drawing showing an example of the response example dictionary of the 2nd operation gestalt.
[Drawing 40] Drawing showing the pattern of the expression of the picture of the agent of the 2nd operation gestalt.
[Drawing 41] Drawing showing the example of response generation after sentiment recognition of the 2nd operation gestalt.
[Drawing 42] Drawing showing an example of the application plan of the 2nd operation gestalt.
[Drawing 43] Drawing showing the response strategy of the 2nd operation gestalt.
[Description of Notations]

10 [-- The data-storage section, 103 / -- Data retrieval Management Department,] -- Information disclosure equipment, 101 -- The input section, 102 104 [-- User sentiment recognition section,] -- The demand receptionist section, 105 -- The response plan creation section, 106 107 [-- The input section, 202 / -- Intention sentiment information extraction section,] -- The response generation section, 20 -- Information disclosure equipment, 201 203 [-- The response generation section, 206 / -- The user information-storage section, 207 / -- The history storage section, 208 a-c / -- The data communication section, 209 a-c / -- A process, 210 / -- The dialog Management Department, 211 / -- The reference section, 212 / -- Data-storage section.] -- The sentiment recognition section, 204 -- The response plan generation section, 205

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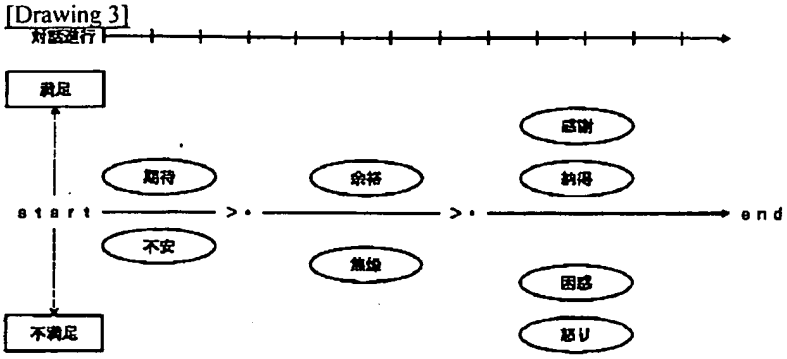
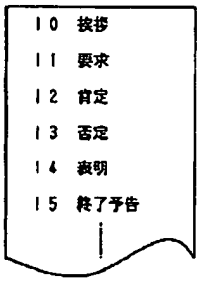
DRAWINGS

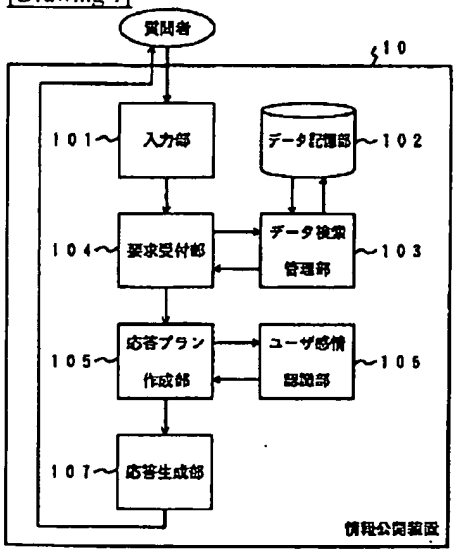
[Drawing 3]



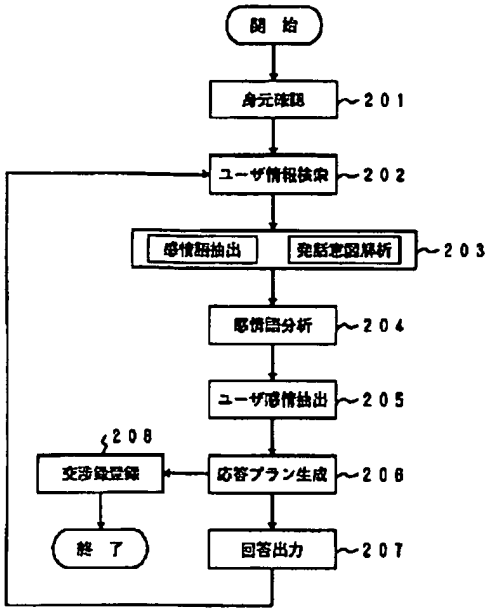
[Drawing 24]



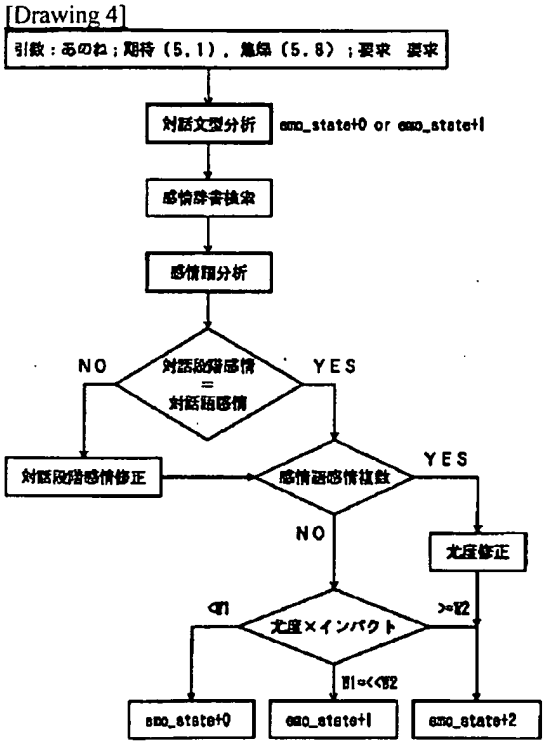
[Drawing 1]



[Drawing 2]



[Drawing 4]



[Drawing 5]

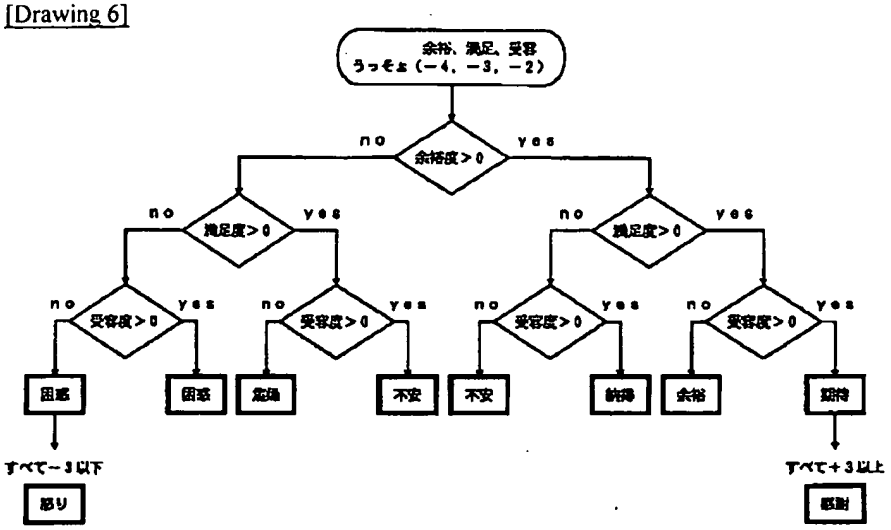
発話意図		修正条件		
エージェント	ユーザ	余 裕	満 足	受 容
拒 否	要求	−2	−1	−1
	否定	−2	−2	−2
	肯定	0	−1	+1
謝 罪	要求	−1	−2	−1
	否定	−2	−2	−2
	肯定	0	−1	+2

[Drawing 7]

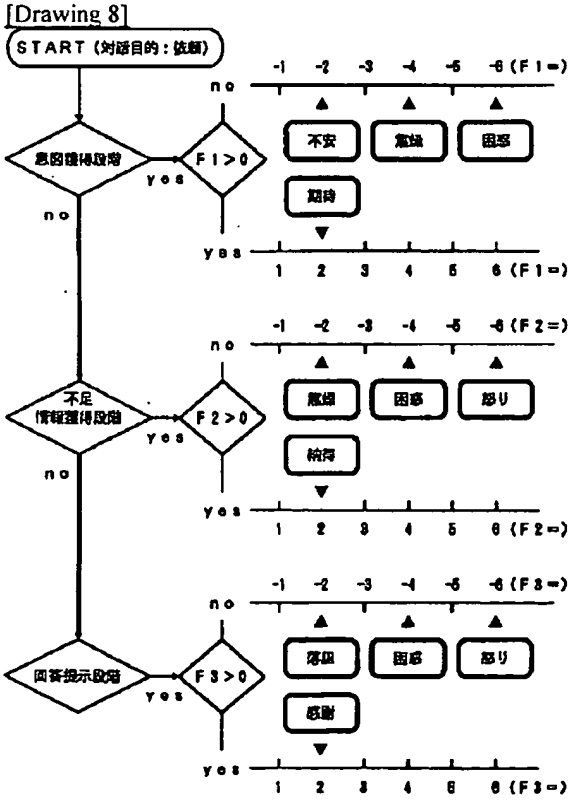
S：加藤さん、こんにちは。どうしたの？
U：山本さんの夏休みの予定だけど、テニス合宿は入ってるよね？
S：ちょっと待ってね。テニス合宿の予定は、入ってないみたい。
U：うっそぉ。じゃぁ、夏休みの予定を教えてよ。
S：ちょっと待ってね。夏休みの予定は、海外旅行です。
U：なるほど。

S：システム
U：ユーザ

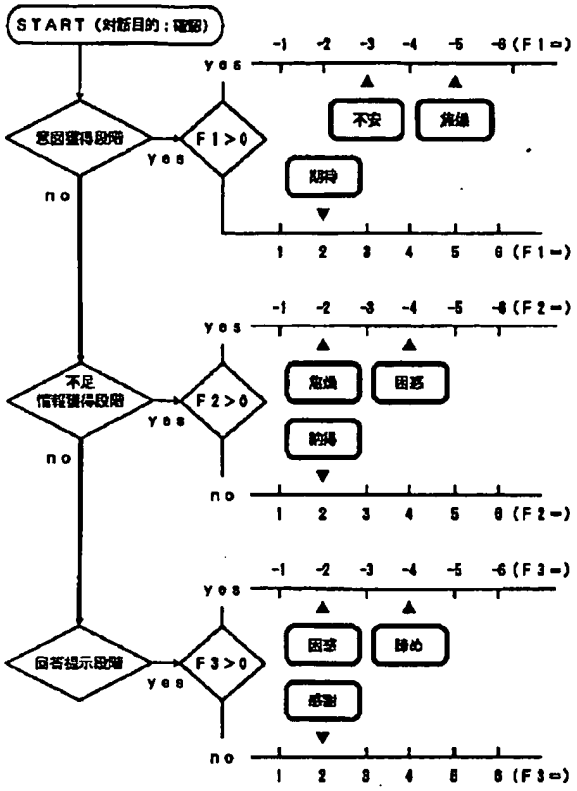
[Drawing 6]



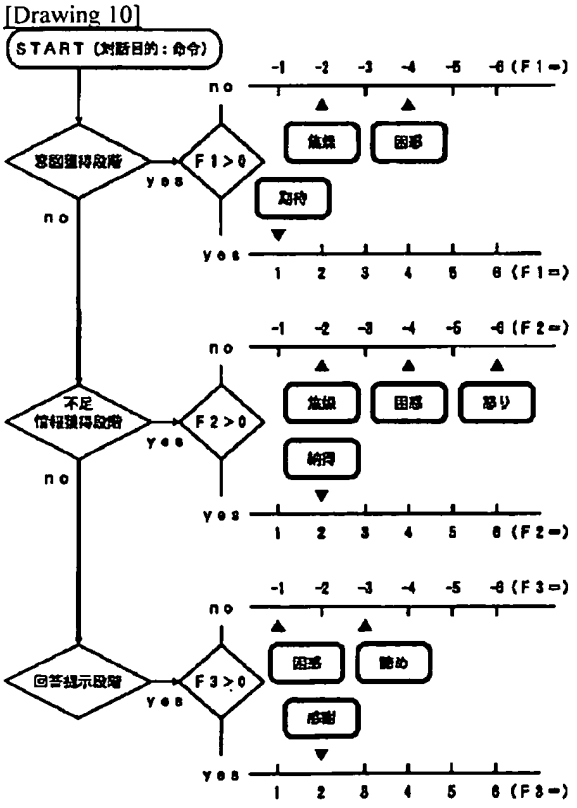
[Drawing 8]



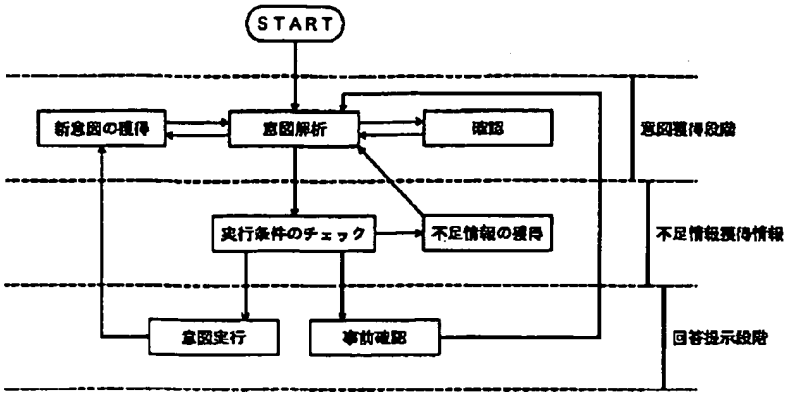
[Drawing 9]



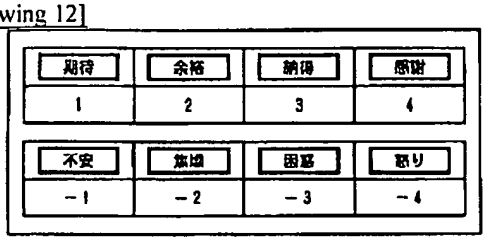
[Drawing 10]



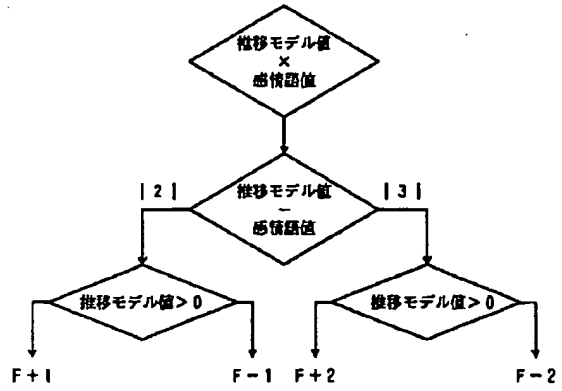
[Drawing 11]



[Drawing 12]

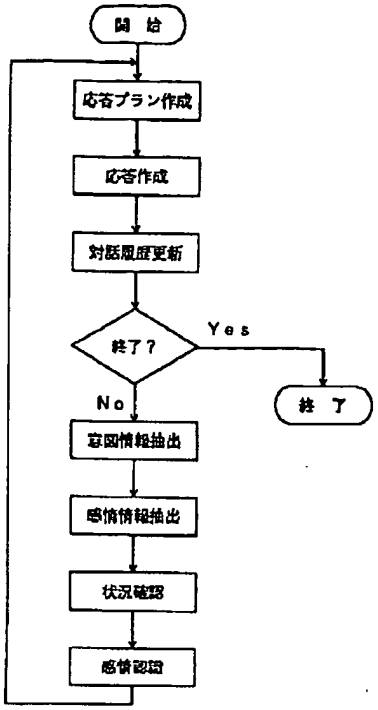


(a)



(b)

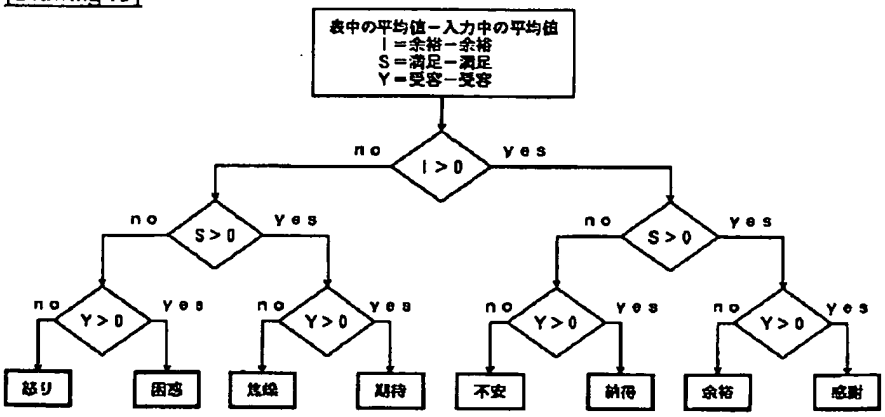
[Drawing 19]



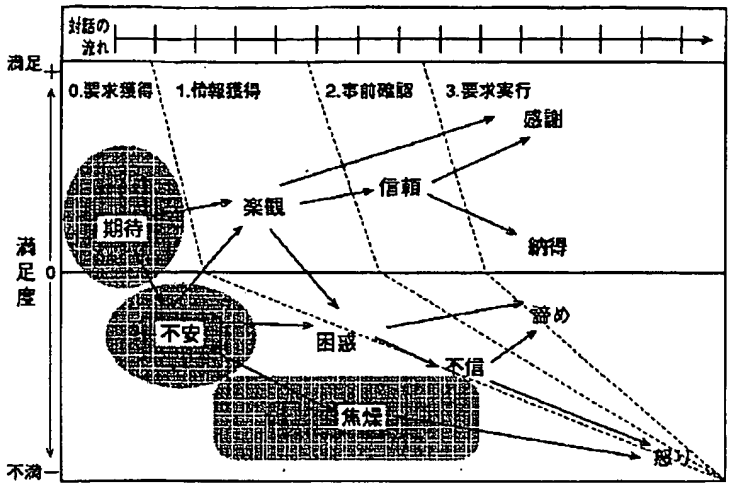
[Drawing 30]

感情名	領域		
	(快-不快)	(受容-拒否)	(余裕-切迫)
期待	3>x>−1	3>y>−3	1>z>−3
不安	1>x>−3	3>y>−3	1>z>−3
焦燥	1>x>−4	1>y>−4	−2>z

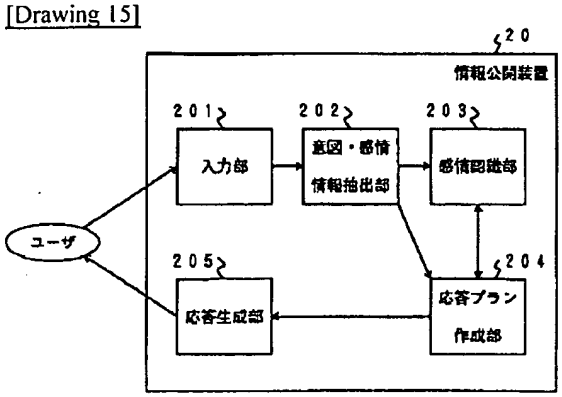
[Drawing 13]



[Drawing 14]



[Drawing 15]



[Drawing 25]

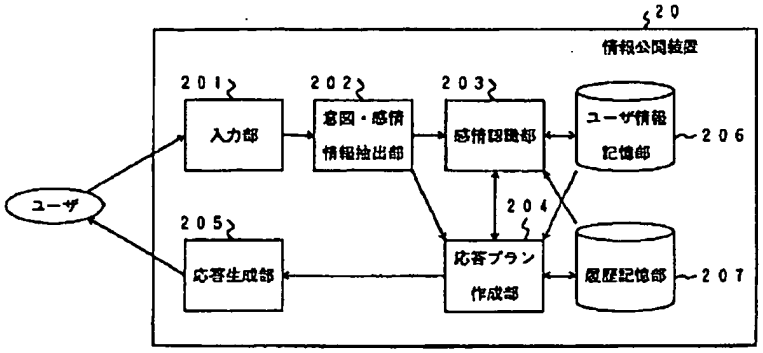
要求対象	要求内容			
スケジュール	参照	変更	追加	削除
文書	参照	変更	追加	削除
情報	参照	変更	追加	削除
伝言	参照	変更	追加	削除
履歴	参照	変更	追加	削除
解答				
説明				
待機				
直接対話				

[Drawing 28]

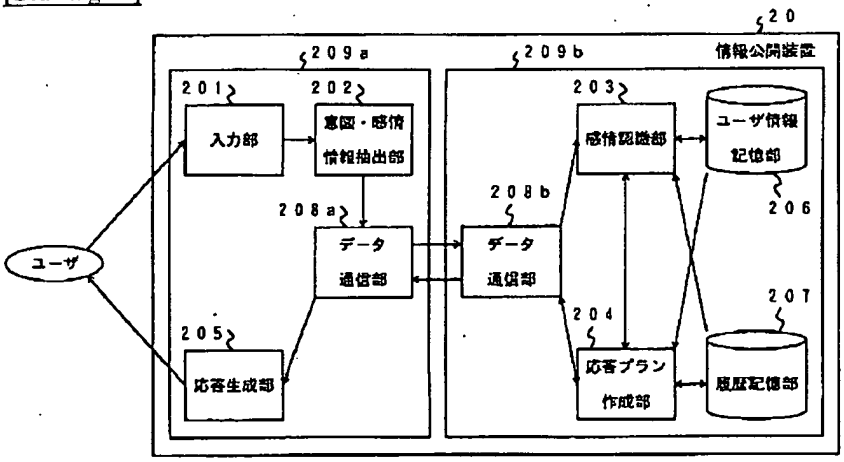
〔快－不快〕	ユーザの予測 システムの応答内容 実行結果	へのユーザの評価
〔受容－拒否〕	システム自身 システムの応答内容	へのユーザの態度
〔余裕－切迫〕	ユーザの要求達成欲 ↕ ---------- 差分に伴う感情 実際の達成状況	

http://www4.ipdl.jpo.go.jp/cgi-bin/tran_web_cg

[Drawing 16]



[Drawing 17]

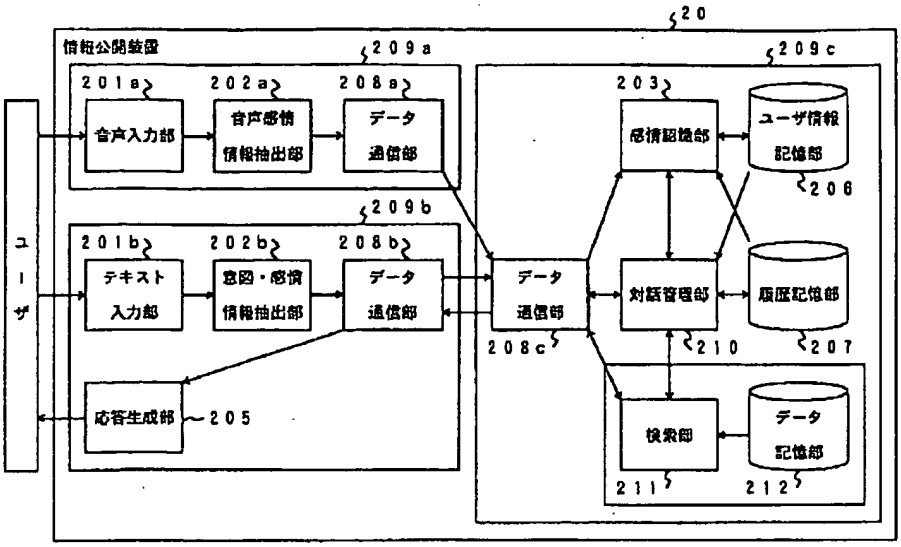


[Drawing 22]

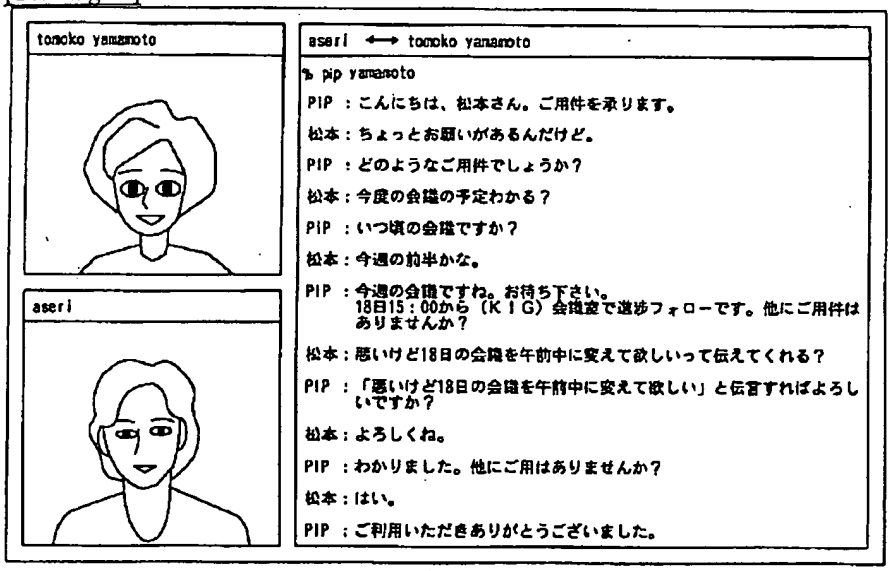
要求種類	尤 度	実行条件	遷移先	優先順位
スケジュール検索	0.4	検索条件＝x | x∈ {date} or 検索条件＝x, y | x, y∈ {act, title, place, week, month}	情報獲得	1
伝言	0.6	伝言内容≠φ ユーザの確認＝Yes	情報獲得 事前確認	1 2
終了	0.7			
直接対話	0.9	対話相手の状況＝OK ユーザの確認＝Yes	要求獲得 事前確認	1 2

[Drawing 18]

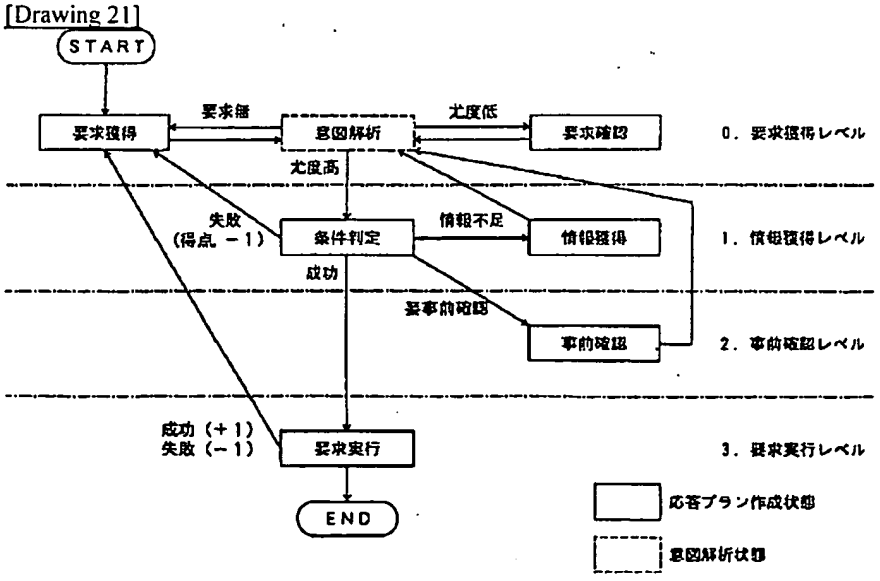
http://www4.ipdl.jpo.go.jp/cgi-bin/tran_web_cg



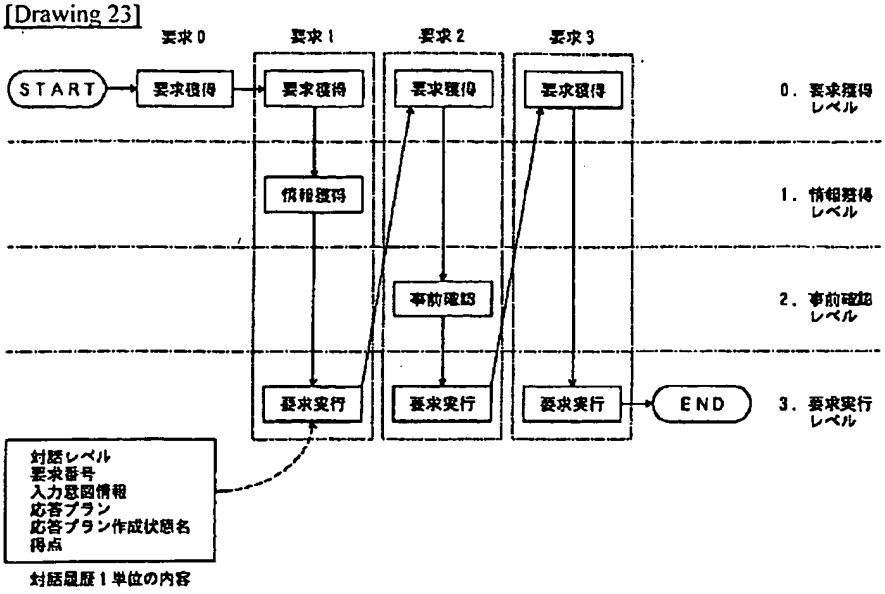
[Drawing 20]



[Drawing 21]



[Drawing 23]



[Drawing 26]

(a) キーワード辞書の書式

```
キーワード；意味表現（尤度，強度）[，意味表現（尤度，強度）]；
  意味表現の種類
    カテゴリ                    talk, request, act, month, date, ....
    カテゴリ＋属性              monthtail, monthtop, monthend, ....
    カテゴリ（＋属性）－項目値  weekend-今週, placetail-会議室, .....
```

(b) 記述例

```
かわって;talk(8,7);
か月後;monthtail-月後(7,5);
か月前;monthtail-月前(7,5);
きのう;date-昨日(9,5);
                    ⋮
何日;date-?(8,5);
何日まで;todate-?(8,5);
                    ⋮
→ 会議;acttail-会議(8,5),act-会議(7,5);
会議室;placetail-会議室(8,5),place-会議室(7,5);
                    ⋮
今週末;weekend-今週(9,5);
今朝;time-朝(8,5);
→ 今度;tense-今度(7,5);
今日;date-今日(9,5);
今晩;time-晩(8,5);
                    ⋮
→ 予定;schedule(9,5);
                    ⋮
```

[Drawing 27]

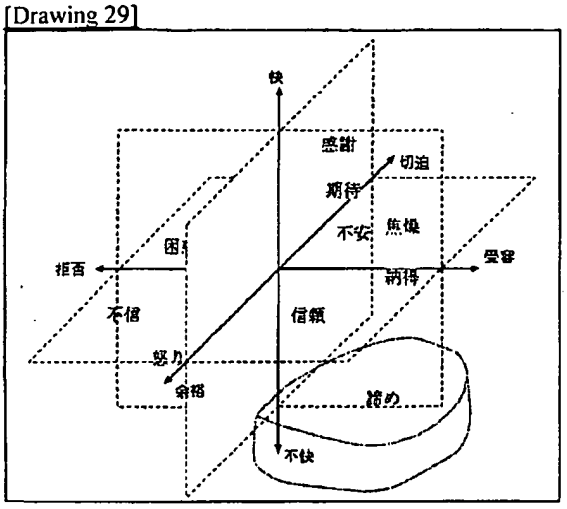
(a) 入力意味表現の書式例

発話番号, 文番号, 文型, 丁度, 強度, 意図種類, 意図内容, 項目種類, 項目名, 場所, 参加者, 時刻, 開始月, 開始日, 開始週, 開始曜日, 開始時刻, 終了月, 終了日, 終了週, 終了曜日, 終了時刻, その他,

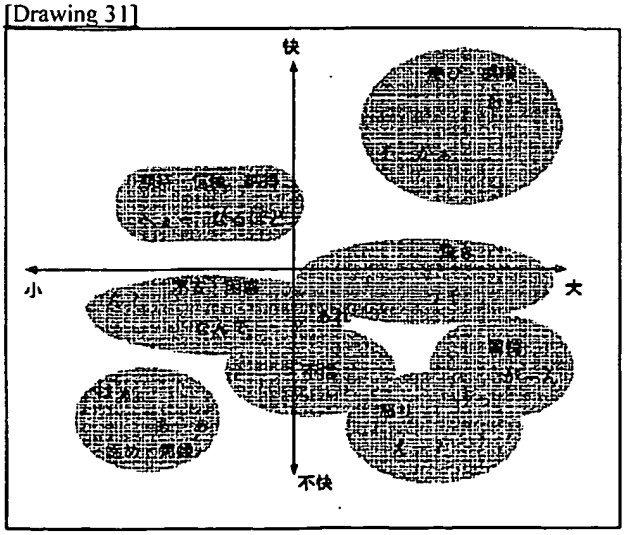
(b) 入力文の変換例

入力文1＝ちょっとお願いがあるんだけど。 1, 1, 平叙, 7, 5, affirmation,.....
入力文2＝今度の会議の予定わかる？ 2, 1, 疑問, 9, 5, request, schedule, 会議,...今度.....
入力文3＝今週の前半かな。 3, 1, 疑問, 4, 5, request, schedule,.....今週ー前半.....
入力文4＝悪いけど18日の会議を午前中に変えて欲しいって伝えてくれる？ 4, 1, 疑問, 7, 5, request, massage, 会議, 悪いけど18日の会議を午前中に変えて欲しい.....18日...午前.....
入力文5＝よろしくね。 5, 1, 平叙, 6, 5, affirmation.....
入力文6＝はい。 6, 1, 平叙, 6, 5, affirmation.....

[Drawing 29]



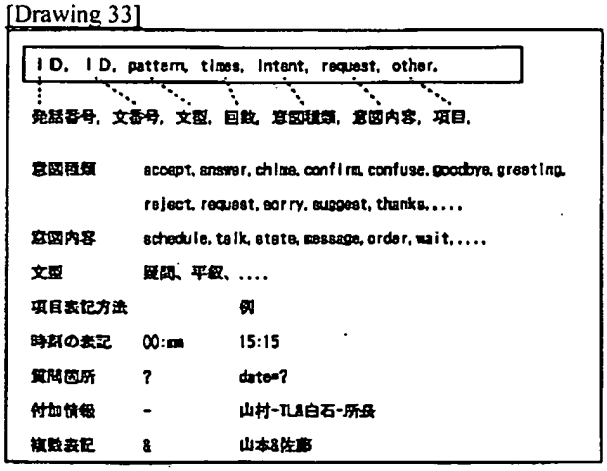
[Drawing 31]



[Drawing 32]

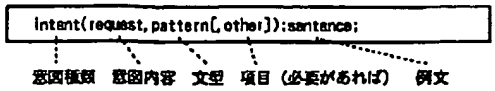
応答プラン			テキストの応答文例	
作成状態	意図種類	意図内容	平叙文	疑問文
START	greeting		こんにちは	
確認要求	request	order	ご用件を承ります	ご用件はなんですか
	suggest	message		ご伝言を承りましょうか
		schedule		スケジュールを表示しましょうか
		talk		直接お話になってはどうでしょうか
	confuse		おっしゃることがわかりません	
要求確認	confirm	message	ご伝言ですね	ご伝言を話されたいのですか
		schedule	スケジュールですね	スケジュールをお尋ねですか
		state	現在の状況ですね	現在の状況をお尋ねですか
		talk	直接話をなさるのですね	直接話をなさりたいのですか
		quit	ご用はお済みですね	ご用はお済みですか
	chime		そうですか	
情報提供	request	message	ご伝言を承ります	ご伝言はなんですか
		schedule	日時をご入力ください	いつの会議ですか
事前確認	confirm	message	ご伝言は～～ですね	～～と伝えてよいでしょうか
		schedule	昨日の会議ですね	昨日の会議ですか
		talk	本人と回線を結びますね	本人と直接話をしていただけますか
要求実行	request	wait	少々お待ち下さい	
	accept	message	承知いたしました	
		schedule	探してみます	
		talk	今連絡をとります	
	answer	schedule	赤村です	
		state	ただいま会議中です	
	sorry		申し訳ございません	
	reject	schedule	スケジュールがみつかりません	
		state	現在ながらわかりません	
		talk	連絡がとれません	
	goodbye		ありがとうございました	

[Drawing 33]

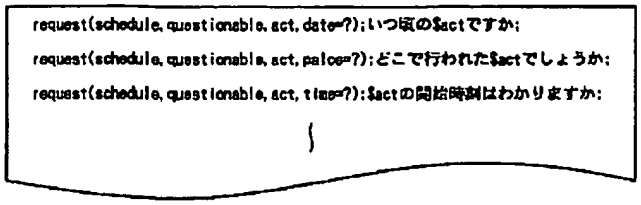


[Drawing 35]

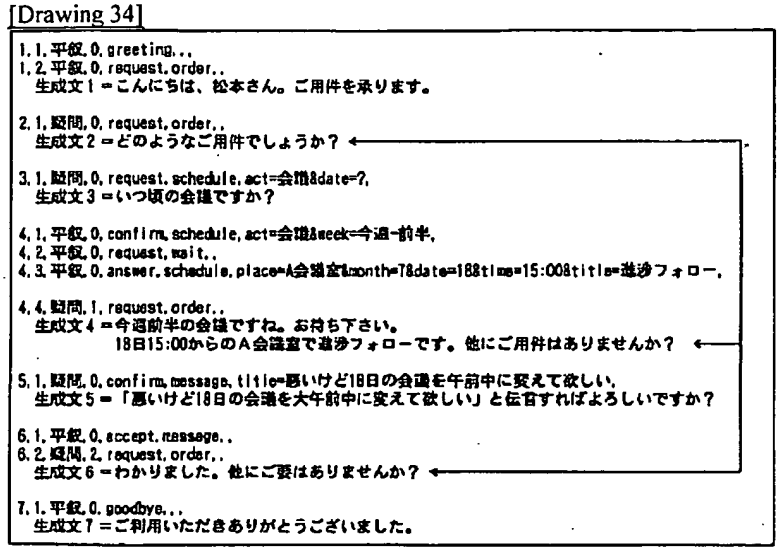
(a) 応答文例辞書の書式例



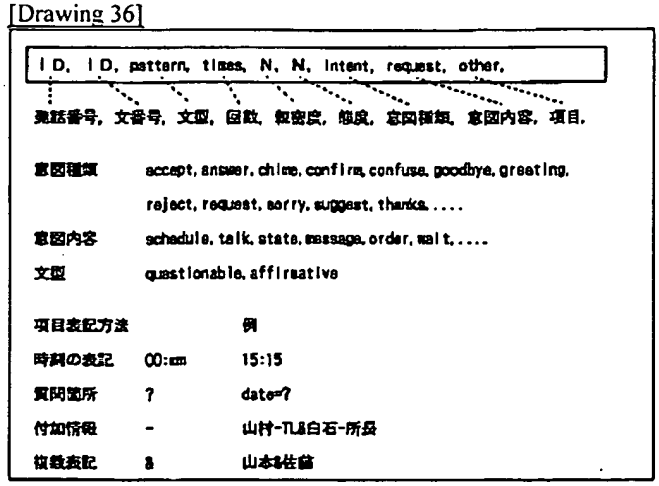
(b) 辞書の記述例



[Drawing 34]



[Drawing 36]



[Drawing 38]

戦略	感情	変更前の条件	変更	効果
かしこまる	怒り 納得 不信 …	1＜親密度＜3，1＜態度＜3 0＜親密度＜3，態度＜3 0＜親密度，態度＜3 …	親密度－1，態度＋1 親密度－1，態度＋1 親密度－1，態度＋1 …	＋1 ＋1 ＋1 …
あらたまる	怒り 不安 納得 困惑 感謝 無関 …	親密度＜＝1，態度＜3 0＜態度＜3 2＜親密度，態度＜3 1＜親密度，態度＜3 親密度＜3，態度＜3 1＜親密度，2＜態度 …	態度＋1 態度＋1 態度＋1 態度＋1 態度＋1 親密度－1 …	＋1 ＋1 ＋1 ＋1 ＋1 ＋1 …
へつらう	感謝 納得 …	0＜親密度＜3，1＜態度 0＜親密度＜3，0＜態度＜3 …	親密度＋1，態度＋1 親密度＋1，態度＋1 …	＋1 ＋1 …
うちとける	感謝 期待 無関 …	2＜親密度＜4，0＜態度＜3 0＜親密度＜4 2＜親密度，0＜態度＜3 …	親密度＋1，態度－1 親密度＋1 態度－1 …	＋1 ＋1 ＋1 …
…				

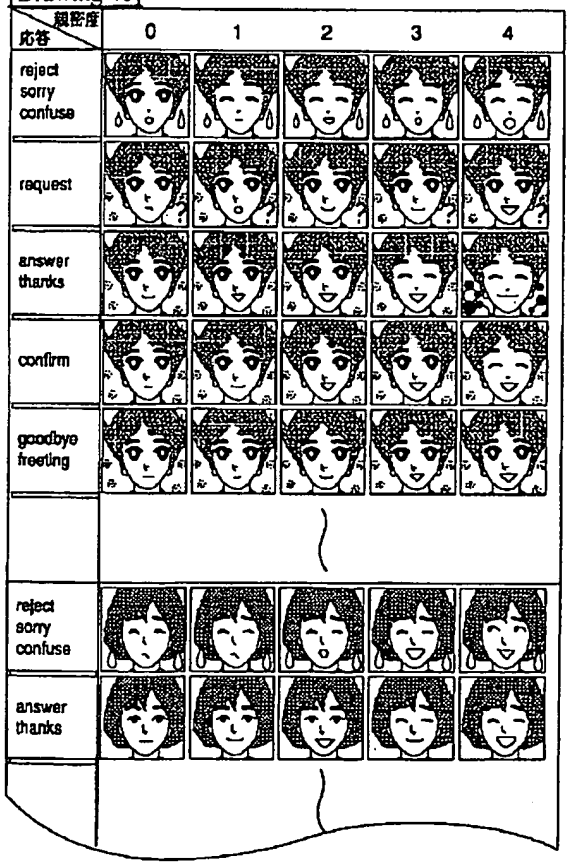
[Drawing 37]

```
1, 1, 平叙, 0, 4, 0, greeting, ,
1, 2, 平叙, 0, 4, 0, request, order, ,
   生成文１＝佐藤さん、こんにちは。要件をどうぞ。

2, 1, 疑問, 0, 4, 0, request, order, ,
   生成文２＝なんでしょ？

3, 1, 疑問, 0, 4, 0, request, schedule, act=会議&date=?,
   生成文３＝いつの会議？

4, 1, 平叙, 0, 4, 0, confirm, schedule, act=会議&week=今週-前半,
4, 2, 平叙, 0, 4, 0, request, wait, ,
4, 3, 平叙, 0, 4, 0, answer, schedule, place=A会議室&month=7&date=18&time=15:00&title=進捗フォロー,

4, 4, 疑問, 1, 4, 0, request, order, ,
   生成文４＝今週前半の会議ね。ちょっと待ってて。
             18日15:00からＡ会議室で進捗フォローだよ。他に何かない？

5, 1, 疑問, 0, 4, 0, confirm, message, title=悪いけど18日の会議を午前中に変えて欲しい,
   生成文５＝「悪いけど18日の会議を午前中に変えて欲しい」と伝えるのね？

6, 1, 平叙, 0, 4, 0, accept, message, ,
6, 2, 疑問, 2, 4, 0, request, order, ,
   生成文６＝ＯＫ。他に用はない？

7, 1, 平叙, 0, 4, 0, goodbye, , ,
   生成文７＝じゃ、またね。
```

[Drawing 39]

```
answer(schedule, affirmative, place, act, 親密度=0-1, 恥度=0);$placeで$actだって;
answer(schedule, affirmative, place, act, 親密度=0-1, 恥度=2-3);$placeで$actです;
answer(schedule, affirmative, place, act, 親密度=0-1, 恥度=2-3);$placeで$actとなっておりますが;
answer(schedule, affirmative, place, act, 親密度=2-4, 恥度=0);$placeで$actじゃない;
answer(schedule, affirmative, place, act, 親密度=2-4, 恥度=2-3);$placeで$actとなっております;
answer(schedule, affirmative, place, act, 親密度=2-4, 恥度=2-3);$placeで$actとなってます;

greeting(affirmative, 親密度=1, 恥度=1, 朝);おはよう;
greeting(affirmative, 親密度=1, 恥度=1-3, 昼);こんにちは;
greeting(affirmative, 親密度=1, 恥度=1-3, 昼);こんばんは;
greeting(affirmative, 親密度=1, 恥度=2-3, 朝);おはようございます;
greeting(affirmative, 親密度=2-3, 恥度=1-3, 昼);こんにちは、$userさん;
greeting(affirmative, 親密度=2-3, 恥度=1-3, 夜);こんばんは、$userさん;
greeting(affirmative, 親密度=2-3, 恥度=2-3, 既知);$userさん、いつもお世話になっております;
greeting(affirmative, 親密度=2-3, 恥度=2-3, 朝);おはようございます、$userさん;
greeting(affirmative, 親密度=2-4, 恥度=0-1, 昼);$userさん、こんにちは;
greeting(affirmative, 親密度=2-4, 恥度=0-1, 朝);$userさん、おはよう;
greeting(affirmative, 親密度=2-4, 恥度=0-1, 夜);$userさん、こんばんは;
greeting(affirmative, 親密度=3-4, 恥度=1-3, 昼);$userさん、こんにちは;
greeting(affirmative, 親密度=3-4, 恥度=1-3, 夜);$userさん、こんばんは;
greeting(affirmative, 親密度=4, 恥度=1, 朝);$userさん、おはよう;
greeting(affirmative, 恥度=1, 未知);はじめまして;
greeting(affirmative, 恥度=2-4, 未知);$userさん、はじめまして;
```

[Drawing 40]



[Drawing 41]

2, 1, 疑問, 0, 2, 1, request, order, 感情＝期待,
生成文 2＝ご用は何でしょうか？

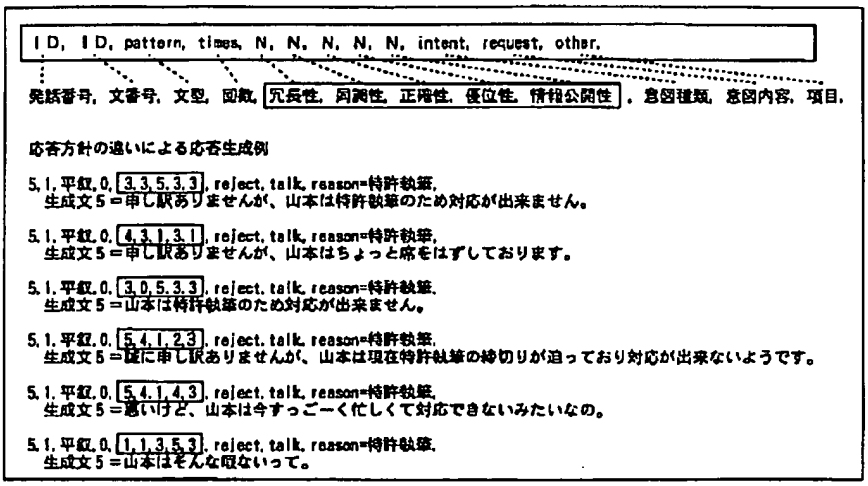
3, 1, 疑問, 0, 2, 1, request, order, 感情＝不安,
生成文 3＝山本のスケジュール参照、山本へのご伝言、山本との直接対話の取り次ぎなどが可能ですが、どれにいたしましょうか？

4, 1, 疑問, 0, 2, 1, request, order, 感情＝困惑,
生成文 4＝ご要望は、スケジュール、伝言、直接対話のうちのどれですか？

5, 1, 疑問, 0, 2, 1, request, order, 感情＝焦燥,
生成文 5＝終了、スケジュール、伝言、直接対話のどれかを入力していただけませんか？

6, 1, 疑問, 0, 2, 1, request, orter, 感情＝怒り,
生成文 6＝申し訳ありませんが、ご用件が理解できません。「直接対話」とご入力くだされば山本が対応いたしますが？

[Drawing 42]



応答方針の違いによる応答生成例

5, 1, 平叙, 0, [3, 3, 5, 3, 3], reject, talk, reason=特許執筆,
生成文 5＝申し訳ありませんが、山本は特許執筆のため対応が出来ません。

5, 1, 平叙, 0, [4, 3, 1, 3, 1], reject, talk, reason=特許執筆,
生成文 5＝申し訳ありませんが、山本はちょっと席をはずしております。

5, 1, 平叙, 0, [3, 0, 5, 3, 3], reject, talk, reason=特許執筆,
生成文 5＝山本は特許執筆のため対応が出来ません。

5, 1, 平叙, 0, [5, 4, 1, 2, 3], reject, talk, reason=特許執筆,
生成文 5＝誠に申し訳ありませんが、山本は現在特許執筆の締切りが迫っており対応が出来ないようです。

5, 1, 平叙, 0, [5, 4, 1, 4, 3], reject, talk, reason=特許執筆,
生成文 5＝悪いけど、山本は今すっごーく忙しくて対応できないみたいなの。

5, 1, 平叙, 0, [1, 1, 3, 5, 3], reject, talk, reason=特許執筆,
生成文 5＝山本はそんな暇ないって。

[Drawing 43]

出力	応答例	感情	条件	効果
自然対話	山本さんに代わりましょうか?	怒り	親密度＞2，親度＜2	＋2
提案		喜り	親密度＞1	＋3
	:	:	:	:
感情確認	怒ってるの?	怒り	親密度＞2，親度＜1	＋2
	忘いでらっしゃるんですか?	喜り	親密度＞2	＋1
	:	:	:	:
原因聞き	なぜ怒ってらっしゃるの?	怒り	親密度＞3，親度＜2	＋2
	:	:	:	:
文句	失礼いたしました，ＰＩＰ－Ｂに代わります，	怒り	親密度＜2	＋1
	:	:	:	:
謝罪	申し訳ありません，	怒り		＋1
	:	:	:	:
意図確認	スケジュールを調べたいんですよね?	怒り		＋1
	:	:	:	:
状況説明	実は来月の予定はまだ入力されていません，	怒り	親密度＞1	＋1
	:	:	:	:
譲歩	わかりました。明日の予定を変更しましょう。	怒り	親密度＞3，親度＞2	＋1
	:	:	:	:
代替案	再来週のスケジュールを調べてみましょうか?	怒り	親密度＞1	＋1
提案	:	:	:	:
関連情報	明日は午前中ならあいているようです。	怒り	親密度＞2	＋1
提供	:	:	:	:
同調	山本のいい加減さには私もあきれます。	怒り	親密度＞3，親度＜3	＋1
	:	:	:	:
同情	それはお困りでしょう，	怒り	親密度＞1，親度＜3	＋1
	:	:	:	:
受容	事情はわかりました。	怒り	親度＜3	＋1
	:	:	:	:
対話加速	来週のスケジュール一覧を表示します。	怒り		＋1
	:	:	:	:
対話阻害	来週の何曜日かわかりませんか?	怒り	親密度＞2，親度＜3	－1
	:	:	:	:
泣き言	私も困っているんです，	怒り	親密度＞3，親度＜3	－1
	:	:	:	:
沈黙	…。	怒り	親度＜2	－1
	:	:	:	:
聞き返り	わからないことは，おこたえできません，	怒り	親密度＜1，親度＜2	－2
	:	:	:	:
無視	他にご用は?	怒り	親密度＜1，親度＜1	－2
	:	:	:	:

[Translation done.]